

AMENDMENTS TO THE CLAIMS

1. (Currently amended) A transmit power control method in a Code Division Multiple Access (CDMA) mobile communication system during a selection/synthesis processing in a Radio Network Controller (RNC) of an up receive from each of base transceiver stations (BTSs) connected thereto, said method comprising:

a checking step of checking whether one or more ~~base transceiver stations~~ (BTSs) are connected to a specific mobile station;

a calculating step of, when a result of the checking step shows that two or more BTSs are connected, using a predetermined selection criterion for selecting CH receive SIRs (Signal to Interference Ratios) corresponding to certain ones of the connected BTSs, and making a calculation by using values of the selected SIRs;

a reference value changing step of changing a value of a reference value S_{ref} according to a result of the calculation;

an upper limit setting step of, when the result of the checking step shows that only one BTS is connected, setting the reference value S_{ref} to an upper limit; and

a reporting step of reporting the changed reference value S_{ref} to all the connected BTSs ~~in each of the steps~~,

wherein it is possible to decide the reference value S_{ref} in response to a variation in a selection/synthesis gain due to an increase or a decrease of the number of connected BTSs.

2. (Previously presented) A transmit power control method in a CDMA mobile communication system according to claim 1, wherein the CH receive SIR comprises one of a Perch CH receive SIR and a communication CH receive SIR for each of the connected BTSs.

3. (Currently amended) A transmit power control method in a Code Division Multiple Access (CDMA) mobile communication system during a selection/synthesis processing in a Radio Network Controller (RNC) of an up receive from each of base transceiver stations (BTSs) connected thereto, said method comprising:

a checking step of checking whether one or more ~~base transceiver stations~~ (BTSs) are connected to a specific mobile station;

a calculating step of, when a result of the checking step shows that two or more BTSs are connected, using a predetermined selection criterion for selecting CH receive SIRs (Signal to Interference Ratios) corresponding to selected ones of the connected BTSs, and making a calculation by using values of the selected SIRs;

a reference value changing step of changing a value of a reference value S_{ref} according to a result of the calculation;

an upper limit setting step of, when the result of the checking step shows that only one BTS is connected, setting the reference value S_{ref} to an upper limit; and

a reporting step of reporting the changed reference value S_{ref} to all the connected BTSs ~~in each of the steps~~, wherein it is possible to decide the reference value S_{ref} in response to a variation in selection/synthesis gain due to an increase or a decrease of the number of connected BTSs, wherein:

said CH receive SIR comprises one of a Perch CH receive SIR and a communication CH receive SIR for each of the connected BTSs, and

said calculation made by using the selected value in the calculating step-comprises:

one of selecting a maximum value S_{max} and a second largest value S_{scd} from among the CH receive SIRs corresponding to the connected BTSs and selecting the maximum value S_{max} from among the CH receive SIRs corresponding to the connected BTSs; and

one of calculating a difference (X) between the Smax and the Sscd and calculating a number (Nbts) of BTSs in which a difference between the Smax and the receive SIR becomes a predetermined value T2 or less.

4. (Previously presented) A transmit power control method in a CDMA mobile communication system according to claim 3, wherein, when the difference X is equal to a predetermined threshold value T1 or more, it is decided that only a small gain can be obtained by selection/synthesis, thereby setting the reference value Sref to an upper limit irrespective of results of the steps.

5. (Previously presented) A transmit power control method in a CDMA mobile communication system according to claim 3, wherein, when the difference X is equal to a predetermined threshold value T1 or less, it is decided that a sufficient gain can be obtained by selection/synthesis, thereby setting the reference value Sref to a value according to the difference X.

6. (Previously presented) A transmit power control method in a CDMA mobile communication system according to claim 3, wherein the reference value Sref is found by the following expression:

$$S_{ref} = S_{ref0} - (T1 - X) \times \alpha$$

where α is a desired constant,

T1 is a predetermined threshold value, and

Sref0 is an upper limit.

7. (Currently amended) A transmit power control method in a Code Division Multiple Access (CDMA) mobile communication system during a selection/synthesis processing in a Radio Network Controller (RNC) of an up receive from each of base transceiver stations (BTSS) connected thereto, said method comprising:

a checking step of checking whether one or more ~~base transceiver stations~~ (BTSS) are connected to a specific mobile station;

a calculating step of, when a result of the checking step shows that two or more BTSS are connected, using a predetermined selection criterion for selecting CH receive SIRs (Signal to Interference Ratios) corresponding to selected ones of the connected BTSS, and making a calculation by using values of the selected SIRs;

a reference value changing step of changing a value of a reference value S_{ref} according to a result of the calculation;

an upper limit setting step of, when the result of the checking step shows that only one BTSS is connected, setting the reference value S_{ref} to an upper limit; and

a reporting step of reporting the changed reference value S_{ref} to all the connected BTSS ~~in each of the steps~~, wherein it is possible to decide the reference value S_{ref} in response to a variation in a selection/synthesis gain due to an increase or a decrease of the number of connected BTSS, wherein:

said CH receive SIR comprises one of a Perch CH receive SIR and a communication CH receive SIR for each of the connected BTSS,

said calculation made by using the selected value in the calculating step comprises:

one of selecting a maximum value S_{max} and a second largest value S_{scd} from among the CH receive SIRs corresponding to the connected BTSS and selecting the maximum value S_{max} from among the CH receive SIRs corresponding to the connected BTSS; and

one of calculating a difference (X) between the Smax and the Sscd and
calculating a number (Nbts) of BTSs in which a difference between the Smax and the receive
SIR becomes a predetermined value T2 or less, and

said reference value changing step comprises one of changing the reference value Sref
to a value according to the difference (X) and changing the reference value Sref to a value
according to the number (Nbts).

8. (Previously presented) A transmit power control method in a CDMA mobile
communication system according to claim 7, wherein, when the difference X is equal to a
predetermined threshold value T1 or more, it is decided that only a small gain can be
obtained by selection/synthesis, thereby setting the reference value Sref to an upper limit
irrespective of results of the steps.

9. (Previously presented) A transmit power control method in a CDMA mobile
communication system according to claim 7, wherein, when the difference X is equal to a
predetermined threshold value T1 or less, it is decided that a sufficient gain can be obtained
by selection/synthesis, thereby setting the reference value Sref to a value according to the
difference X.

10. (Previously presented) A transmit power control method in a CDMA mobile
communication system according to claim 7, wherein the reference value Sref is found by the
following expression:

$$Sref = Sref0 - (T1 - X) \times \alpha$$

where α is a desired constant,

T1 is a predetermined threshold value, and

S_{ref0} is an upper limit.

11. (Previously presented) A transmit power control method in a Code Division Multiple Access (CDMA) mobile communication system, said method comprising, in a radio network controller (RNC) interconnected to a plurality of Base Transceiver Stations (BTSS):

selecting CH receive SIRs (Signal to Interference Ratios) corresponding to BTSS connected to a specific Mobile Station (MS), said selecting based on a selection criterion which defines which of the connected BTs will be involved;

calculating a selection/synthesis gain from said selected SIRs; and

using said selection/synthesis gain to calculate a reference value S_{ref} for an outer loop control of said transmit power.

12. (Previously presented) The transmit power control method of claim 11, further comprising:

transmitting said reference value S_{ref} to all BTSS connected to said MS.

13. (Previously presented) The transmit power control method of claim 11, further comprising:

prior to said selecting CH receive SIRs, determining whether more than one BTSS is connected to said MS.

14. (Previously presented) The transmit power control method of claim 11, wherein

said calculating said selection/synthesis gain comprises calculating a difference X between a maximum value S_{max} and a second largest value S_{scd} from among the CH receive SIRs, and

said reference value S_{ref} is calculated by:

determining whether said difference X exceeds a predetermined threshold.

15. (Previously presented) The transmit power control method of claim 14, the calculation for said reference value S_{ref} further comprising:

if said threshold is exceeded, setting S_{ref} to an upper limit.

16. (Previously presented) The transmit power control method of claim 15, the calculation for said reference value S_{ref} further comprising:

if said threshold is not exceeded, changing S_{ref} as a function of said difference X .

17. (Previously presented) The transmit power control method of claim 11, wherein

said calculating said selection/synthesis gain comprises determining a maximum value S_{max} and determining a number of connected BTSs (N_{bts}) for which a difference between said maximum value S_{max} and the receive SIR becomes equal to a predetermined threshold value or less, and

said reference value S_{ref} is calculated by:

if $N_{bts} \leq 1$, setting S_{ref} to an upper limit; and

if $N_{bts} \geq 2$, changing S_{ref} as a function of N_{bts} .

18. (Previously presented) The transmit power control method of claim 11, wherein

said calculating said selection/synthesis gain comprises calculating a difference X between a maximum value S_{max} and a second largest value S_{scd} from among the CH receive SIRs, and

said reference value S_{ref} is calculated by a function of a number of connected BTSs (N_{bts}) and X .

19. (Previously presented) The transmit power control method of claim 1, wherein
said calculating comprises calculating a difference X between a maximum value S_{max} and a second largest value S_{scd} from among the CH receive SIRs, and
said reference value S_{ref} is calculated by a function of a number of connected BTSs (N_{bts}) and X .

20. (Previously presented) An apparatus serving as a radio network controller (RNC) in a Code Division Multiple Access (CDMA) mobile communication system, said apparatus comprising:

a Perch CH receive quality observing portion to receive SIRs (Signal to Interference Ratios) from all Base Transceiver Stations (BTSs) connected to a specific Mobile Station (MS); and

a selection/synthesis processing portion to select ones of said SIRs to calculate a selection/synthesis gain, a predetermined selection criterion being used to define which SIRs of said connected BTSs are to be selected for calculating.

21. (Previously presented) The apparatus of claim 20, wherein said selection/synthesis process portion further uses said selection/synthesis gain to calculate a reference value S_{ref} for an outer loop control of a transmit power for said CDMA system.

22. (Previously presented) The method of claim 1, wherein the decision for said reference value S_{ref} includes an evaluation of a degree of contribution of each said connected BTS.

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23. (Previously presented) The method of claim 1, wherein the decision for said reference value S_{ref} includes determining whether the selection/synthesis gain can be obtained by checking whether a difference of said SIRs received at said BTSs is small.